DIVISION OF WATER POLLUTION CONTROL

NPDES Permit No. TN0077691
Spencer STP
Notice of Determination
September 5, 2003

On August 30, 2002, the Division of Water Pollution Control issued an NPDES permit to the Spencer Sewage Treatment Plant that allowed a discharge of treated municipal effluent to enter the Caney Fork River at mile 100. Spencer has not built the outfall line to mile 100 awaiting final design and funding. On June 11, 2003, the City of Spencer requested that the division modify its NPDES permit to allow discharge of treated municipal effluent to mile 104.6 of the Caney Fork River. On July 10, 2003, the division issued Public Notice #MMIII-014 which announced the proposed discharge. At the same time, the division issued Public Notice #PH2003-007, which announced a public hearing on the proposed discharge. On August 12, 2003, the division held a public hearing at the Spencer Civic Center. This Notice of Determination serves as the division's response to comments before, during and after the hearing and provides the basis for the division's decision.

1. COMMENT: Sewage shouldn't be discharged into public waters. What is the quality of Spencer's wastewater?

   RESPONSE: The state does not allow untreated sewage to be discharged into any water of the state. Spencer's wastewater must be highly treated to meet the requirements of permit number TN0077691. The quality of Spencer's wastewater is well within the limits that are applicable for the Caney Fork River. The table below compares Spencer's effluent (based on the June 2003 discharge monitoring report) to the limits of permit number TN0077691.

Parameter	**Permit Limit**	**Actual Effluent Data**
$CBOD_5$	25 mg/l	2 mg/l
Total Suspended Solids	30 mg/l	3 mg/l
Ammonia-Nitrogen	15 mg/l	2.2 mg/l
Fecal Coliform	200 colonies/100 ml	1 colony/100 ml
E. Coli	126 colonies/100 ml	1 colony/100 ml
Dissolved Oxygen	3.0 mg/l (minimum)	6.2 mg/l
% CBOD removed	85 %	99 %
% Total Suspended Solids removed	85 %	99 %

2. COMMENT: What happens if the plant isn't operated correctly? Shouldn't Spencer have 24-hour coverage?

   RESPONSE: Safeguards are in place to ensure proper operation. First of all, a certified operator must supervise the operation of the wastewater plant. Operators are certified by gaining appropriate experience and also by successfully passing standardized examinations. Next, Spencer's wastewater plant includes duplicate unit operations and is fed primarily by a pressurized system, which substantially reduces the risk of hydraulic overload. Finally, if things do go wrong, TDEC works with towns to resolve problems quickly, but can ultimately use our enforcement authority to levy fines and more importantly, mandate corrective action.

   Most plants of Spencer's size do not have 24-hour coverage. Instead, they typically (as does Spencer) have 8-hour coverage, Monday through Friday with differing levels of coverage on the weekends

3. COMMENT: How can this discharge be safe for the Caney Fork River, if it wasn't considered safe for the cave? How will the uses of the Caney Fork River be protected?

   RESPONSE: The division maintains that the permit limits were fully protective for Dry Fork, even the portion that flowed through Rumbling Falls Cave. Spencer voluntarily surrendered permit number TN0074802 as part of settlement negotiations between the state, citizen interest groups and the city. The permit limits established in permit number TN0077691 are fully protective of all the designated uses of the Caney Fork River. The fish and aquatic life uses are protected by limits that prevent depletion of instream oxygen levels from falling below 5.0 mg/l and the recreation use is protected by strict limits on bacteria.

4. COMMENT: Why can't Spencer use another means, such as land application, to dispose of their waste? Couldn't land application more thoroughly remove bacteria from the wastewater?

   RESPONSE: Please refer to item 13 of the August 30, 2002, Notice of Determination (attached).

5. COMMENT: What is the likelihood that the outfall line would rupture and also what would be the environmental consequences of such a rupture? How will Spencer monitor to detect such a failure?

   RESPONSE: The state requires that a professional engineer design the outfall line in accordance with accepted, tried and true design practices. Therefore failure is very unlikely. Even so, the results of an outfall line rupture would be akin to a water leak in that the line would contain fully treated effluent. Spencer will continuously monitor flow both at the plant and at the outfall.

6. COMMENT: What about back-flow upstream from the Calfkiller River?

   RESPONSE: Please refer to item 4 of the August 30, 2002, Notice of Determination (attached).

7. COMMENT: What about other sources of pollutants into the Caney Fork River?

   RESPONSE: Sources of pollutants include agricultural inputs from livestock operations and row crops. Other sources would include failing septic tanks.

8. COMMENT: Spencer ultimately desires to receive industrial waste. What safeguards would be in place were they to do so?

   RESPONSE: Spencer does not receive industrial wastewater. Spencer can recruit industry that would only discharge domestic waste. However, should Spencer recruit an industry that would discharge industrial waste, then the city must develop a state-approved pretreatment program. The approval process for a pretreatment program involves a considerable amount of time and effort and includes a public participation component. The purpose of the pretreatment program is to make sure that the wastewater plant, the collection system, wastewater residuals and most of all, the receiving stream are not harmed by industrial waste.

9. COMMENT: Spencer should pursue the alternative that would most quickly eliminate the discharge from Lick Branch.

   RESPONSE: The division agrees that Spencer should make every effort to cease its discharge from Lick Branch as soon as possible. Considering the fact that Spencer already has an effective permit to discharge to the Caney Fork River, a completed application for federal funding with the Economic Development Agency for an outfall to the river, discharge to the Caney Fork River would be the most expeditious way to eliminate the Lick Branch discharge.

10. COMMENT: Notice was only made available to Van Buren County. What about residents of White and Warren Counties?

    RESPONSE: In accordance with state rules, notice of the permit and hearing was posted on the state's web page as well at Spencer's city hall, the Citizen's Bank in Spencer and the local post office. Additionally the notice of the permit and hearing was mailed to persons on the division's public notice mailing list. Notice of the hearing was also given in the *Mountain View News*. Although White County residents attended the hearing and the division has received numerous calls and letters from White and Warren County residents, we understood the concern that persons from White and Warren County may have been unaware of the permit modification process. For this reason, the division participated in the September 2, 2004, public meeting organized by Representative Charles Curtiss.

11. COMMENT: Would mile 104.6 have the potential for more human impact than mile 100? Have both points been assessed? What about an alternate site in a less populated area?

    RESPONSE: Both miles 104.6 and 100 are classified for body contact recreation. Therefore, the permit limits take into account considerable recreational use. The division's assessment of the suitability of the Caney Fork River for discharge extended from mile 99 to mile 105. The division's review of potential discharge points focuses more on water quality issues as opposed to population density.

12. COMMENT: The environmental impacts of the new discharge route should be considered.

    RESPONSE: Please refer to item 1 of the August 30, 2002, Notice of Determination (attached).

13. COMMENT: How would the discharge be affected by the construction of an upstream dam?

    RESPONSE: The approval of any future upstream dam would be contingent upon the dam's operation having no significant effect on the assimilative capacity of the Caney Fork River.

14. COMMENT: What about threatened and endangered species at mile 104.6?

    RESPONSE: Please refer to item 14 of the August 30, 2002, Notice of Determination (attached).

15. COMMENT: An EIS should be done.

    RESPONSE: Please refer to item 1 of the August 30, 2002, Notice of Determination (attached).

16. COMMENT: The permit refers to the following metals: arsenic, mercury, cadmium, molybdenum, zinc, nickel, lead, copper and selenium. Aren't these metals toxic?

    RESPONSE: The verbiage in question refers to maximum allowable concentrations in sludge to be land applied, not the wastewater discharge. Typically only cities receiving industrial wastes may have these metals present, however, pretreatment programs (as described in item 8 above) prevent metals concentrations in sludge from approaching those levels.

    These metals, as well as many other compounds, can be toxic to fish and aquatic life at high enough concentrations. Tennessee's Water Quality Standards, Chapters 1200-4-3 and 1200-4-4, establish safe levels for these and many other pollutants.

17. COMMENT: Why is Spencer's wastewater being discharged so far away?

    RESPONSE: Spencer is located relatively high on the mountain and streams adjacent to Spencer have limited assimilative capacity at best. The Caney Fork River is the body of water nearest Spencer with more than adequate assimilative capacity.

18. COMMENT: What other dischargers affect the Caney Fork River?

    RESPONSE: The Sparta STP discharges to mile 11.5 of the Calfkiller River, a tributary to the Caney Fork. The division's model predicts that, even at worst case, the Calfkiller's water quality approaches background conditions at the point of confluence with the Caney Fork River.

19. COMMENT: Won't there be an odor associated with the discharge?

    RESPONSE: Occasionally, there are faint, musty, but not unpleasant odors associated with wastewater treatment plant effluent, particularly chlorinated effluent. Considering that Spencer's effluent is disinfected via ultraviolet light instead of chlorination, effluent odor should be minimal.

20. COMMENT: Won't sludge from the wastewater sink to the bottom of the river and cause problems?

    RESPONSE: Wastewater treatment residuals, or sludge is separated from effluent in the clarifier portion of a treatment plant. The effluent discharged from Spencer contains no sludge.

21. COMMENT: How does wastewater disposal affect wells and crops?

    RESPONSE: The discharge of Spencer's wastewater into the Caney Fork River will have no effect on wells or crops.

22. COMMENT: Where do other cities such as Nashville, Carthage and Sparta discharge their wastewater?

    RESPONSE: Nashville has three plants that discharge to miles 182.6, 190.7, and 213.9 of the Cumberland River. Carthage discharges to mile 308 of the Cumberland River and Sparta, as mentioned in item 18 above, discharges to mile 11.5 of the Calfkiller River.

23. COMMENT: Spencer should have the same opportunities as other Tennessee towns. Spencer is the only county seat is Tennessee without a sewer plant.

    RESPONSE: Prior to the plant coming on line in January 2003, Spencer was the only county seat without centralized wastewater treatment and collection.

24. COMMENT: Which state agency issues wastewater permits?

    RESPONSE: The Tennessee Division of Water Pollution Control issues NPDES permits such as TN0077691.

25. COMMENT: Spencer does a poor job with its drinking water. Won't they also do a poor job with their wastewater?

    RESPONSE: The Division of Water Supply has cited Spencer for administrative and technical violations having to do with its water treatment system. However, none of the violations have been related to quality of finished water. The Division of Water Pollution Control expects that Spencer will meet the requirements of its permit and produce good quality effluent. Further discussion on this point can be found in the response to comment # 1.

26. COMMENT: How large is the effluent line? Does Spencer plan to cascade its wastewater down the bluff? Could the outfall be submerged?

    RESPONSE: Spencer's effluent line will be 8 inches in diameter. An open, inline, cascade aerator similar to that employed at the West Warren-Viola STP in Morrison, will be incorporated into the effluent line. Following the cascade aerator, the effluent will be enclosed in the 8 inch pipe and enter the Caney Fork via a submerged outfall.

27. COMMENT: Does this portion of the Caney Fork River (Great Falls Lake) turn over; and if so what would be the effect of the discharge in combination with turnover on water quality? Would TVA's operation of Great Falls dam affect the river's ability to assimilate Spencer's discharge?

    RESPONSE: TVA advises that the operation of Great Falls Dam is very dynamic, therefore lake turnover is unlikely. Again, the storage volume of the lake, between 37,000 acre-feet and 51,300 acre-feet, is so large compared to the volume of Spencer's discharge that the affect of the discharge on overall reservoir water quality will be minimal.

28. COMMENT: Won't wet weather affect the quality of Spencer's effluent just like Nashville?

    RESPONSE: The effect of wet weather on treatment systems is a function of the type of collection system that delivers wastewater to the treatment plant. Nashville has a combined system that captures stormwater as well as sewage. Spencer, on the other hand, has a mostly pressurized collection system that delivers little stormwater in comparison with the amount of sewage delivered.

29. COMMENT: Spencer's permit requires that the plant be operated by a certified operator. Are they in compliance with that as well as other requirements of their current permit to discharge to Lick Branch?

    RESPONSE: Spencer's permit is being operated under the supervision of a certified operator. State regulations require that the certified operator in charge either be onsite or available during each operational shift. According to the July and August 2003 reports, Spencer is in compliance with its effluent limits.

30. COMMENT: Spencer's effluent has had a negative effect on Lick Branch in that there is an odor and no downstream aquatic life.

    RESPONSE: The division will investigate potential odor issues in Lick Branch. However, it should be noted that the opportunity for odor causing compounds to exist in an aerated, non-chlorinated and filtered effluent is small. The division's initial assessment of Lick Branch prior to discharge also found little aquatic life. It is possible that the opportunity for development of an aquatic ecosystem is limited.

31. COMMENT: Could Spencer's effluent be discharged into strip pits?

    RESPONSE: Through the division's work in an unrelated issue, we've learned that many strip pits in Van Buren County have connections to groundwater.

32. COMMENT: What about power outages?

    RESPONSE: Spencer has a diesel generator that serves as a back-up power supply.

33. COMMENT: What about secondary impacts?

    RESPONSE: The term, "secondary impacts", generally refers to growth and development that occurs as a result of centralized wastewater treatment and collection. Such impacts are beyond the scope of this NPDES permit.

34. COMMENT: Is any portion of the Caney Fork River impaired? Who assesses the water s of the Caney Fork river and where are such assessments made?

    RESPONSE: Portions of the Caney Fork River downstream from Great Falls Dam (mile 91) and Center Hill Dam (mile 26.6), respectively are impaired, due primarily by dam operation and would not be affected one way or another by Spencer's small discharge.

    The Division of Water Pollution Control has the primary responsibility for testing and assessing use support status of Tennessee's waters. Other agencies, such as TVA, the USGS and the Corps of Engineers may also test waters and provide data to the division. The division collects data in a given watershed every five years. Assessments are based on our own measurements as well as those from other agencies that may be collected at different times. In the Caney Fork River, most of the data collected more recently has been in the lower portions that are below each dam. A comprehensive assessment was performed on the Great Falls Lake portion back in the 1990s that indicated full use support. Recent assessment of the river upstream from Cane Creek shows the water to be of exceptional quality.

35. COMMENT: What type of monitoring will be required and will the public be notified of any deficiencies?

    RESPONSE: Permit number TN0077691 requires a monitoring frequency of 3 times per week for $CBOD_5$, Ammonia as N, Suspended Solids, Fecal Coliform, *E. coli* and Settleable solids; and 5 times per week for dissolved oxygen and pH. The permit requires notification to the division of any non-compliance, but does not require public notification. However, all monitoring reports are public documents

36. COMMENT: There should have been more engineering studies done for this system?

    RESPONSE: Typically only one engineering report is done for a new or modified wastewater system. In Spencer's case, numerous studies have been performed including a preliminary report during the early 1990s, an alternatives analysis necessary for the state's loan program, a design report necessary for plans approval, a specific land application evaluation, a discharge viability report prepared by EPA, plus additional engineering study required by the application for funding from the Economic Development Agency.

DETERMINATION

The final permit will allow discharge at either mile 100 or 104.6. The division's determination is that modification of permit number TN00777691 to allow Spencer to discharge treated wastewater to either mile 104.6 or mile 100 of the Caney Fork River will be safe and protective of all designated uses.

Copies of the final permit are available upon request. Please contact Ms. Kathy Mitchell at (615) 532-0667 or at Kathy.Mitchell@state.tn.us to request a copy of the revised draft permit.

DATE : September 5, 2003

Saya Ann Qualls, P.E.
Manager, Permit Section